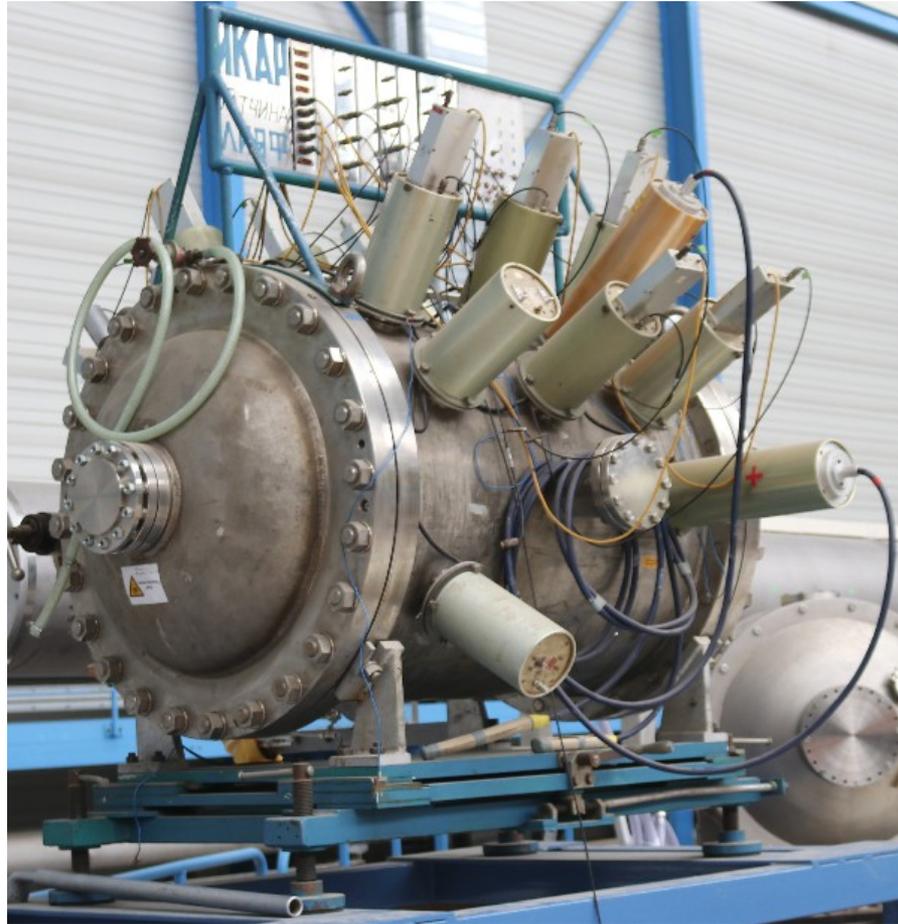


IKAR TPC

Status of the preparation for pilot Run

Evgeny Maev, PNPI

IKAR at GSI



IKAR at GSI



Main parameters of the IKAR pressure vessel

Pressure vessel inner diameter	740 mm
Vessel length	1600 mm
Total volume	0.55 m ³
Maximal operating pressure	10 bar
Spherical Be windows:	
70 mm diameter, 0.5 mm thickness	
Total weight with the small support	~ 1500 kg

Inner IKAR structure

Two drift cells 370 mm(cathode – grid distance)

Grid – anode distance 10 mm

Diameter of the cathode 570 mm

Grid diameter 570 mm, useful diameter 490 mm

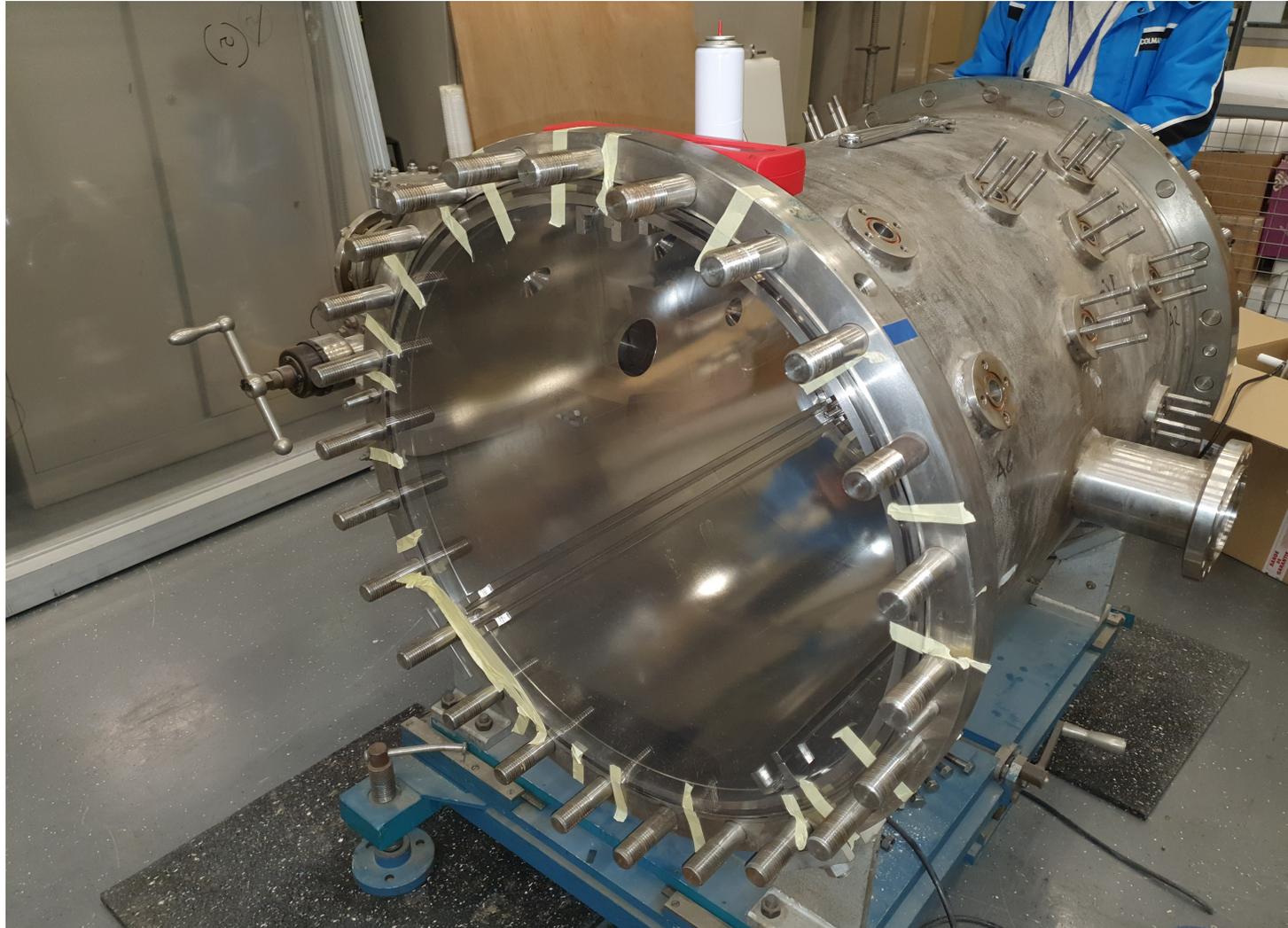
Anode diameter 490 mm (the diameter of the new central part is 400mm).

GRID and Cathode

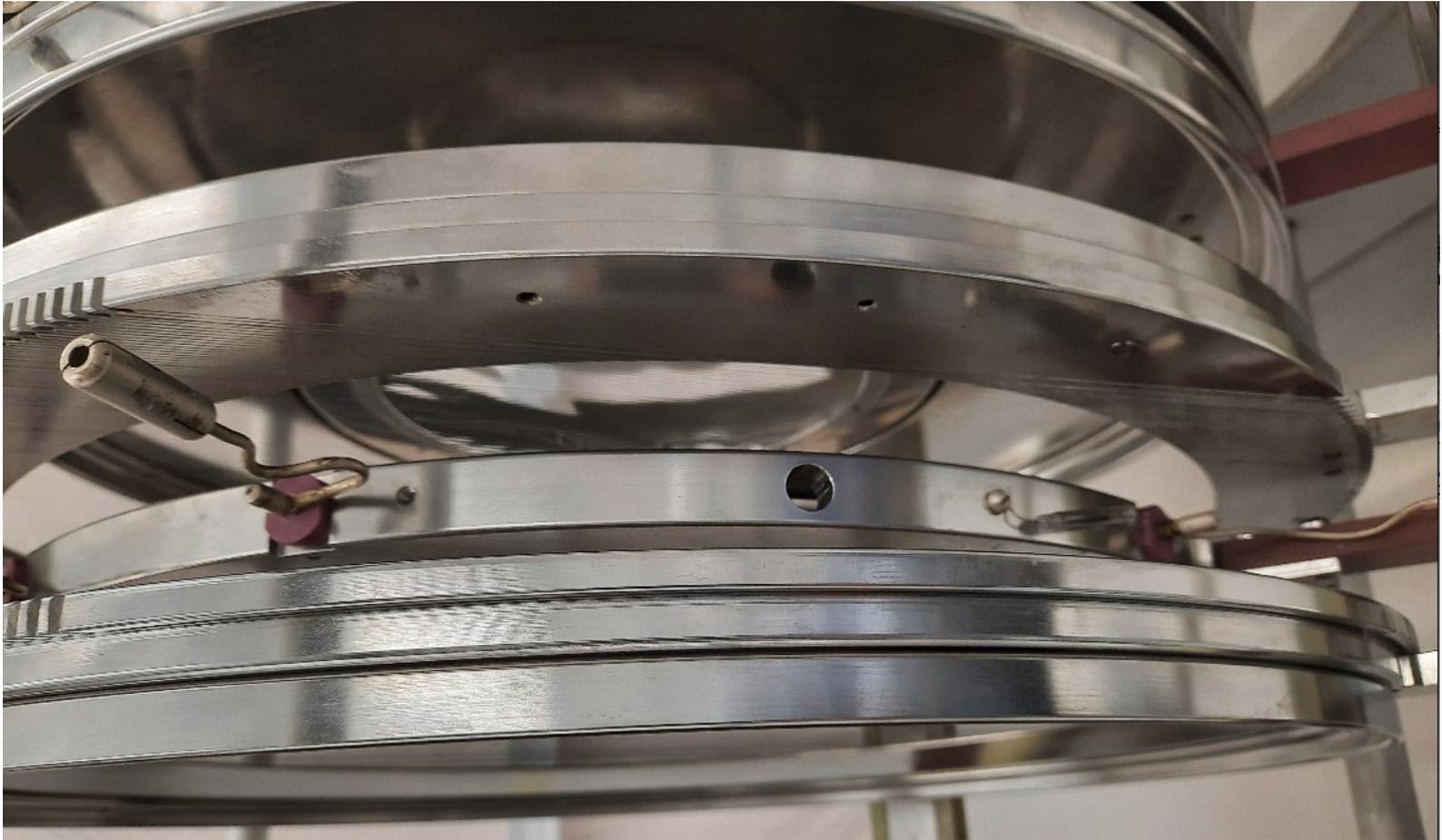
The grid is made of a stainless-steel ring with steel wires, 100 μm diameter, wound with 1.5 mm step. The inner grid diameter is 490 mm, the outer grid diameter is 590 mm.

The cathode is made of a stainless-steel disk with a thickness of 5 mm and 570 mm diameter. The central cathode part (100mm diameter) is made from 30 μm Al foil.

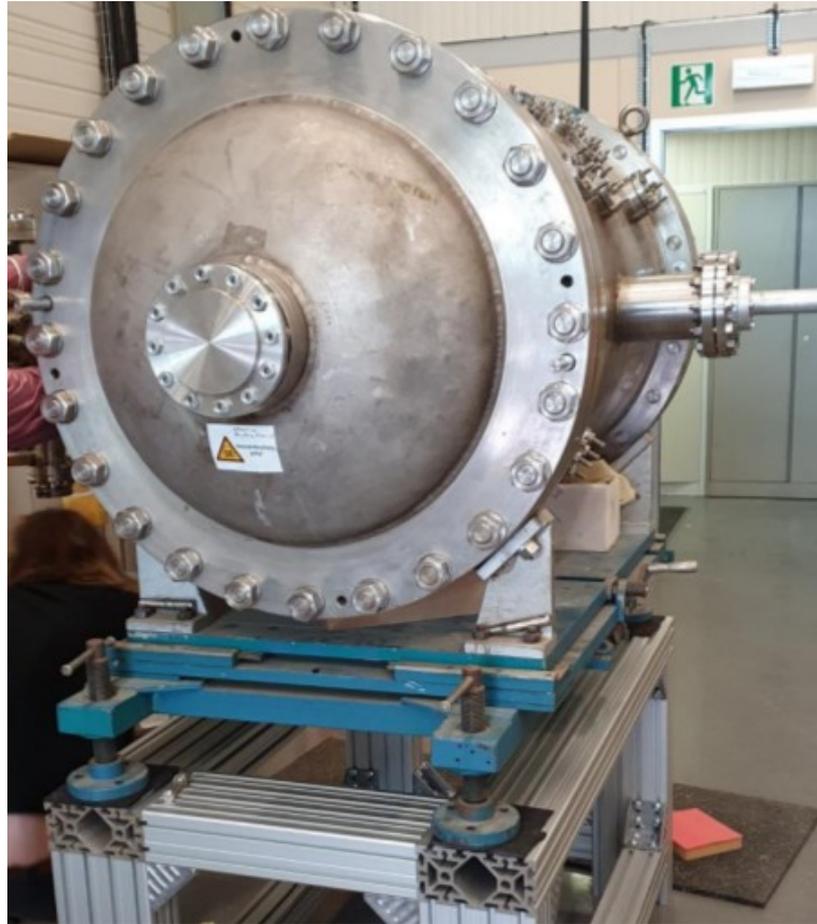
IKAR at CERN



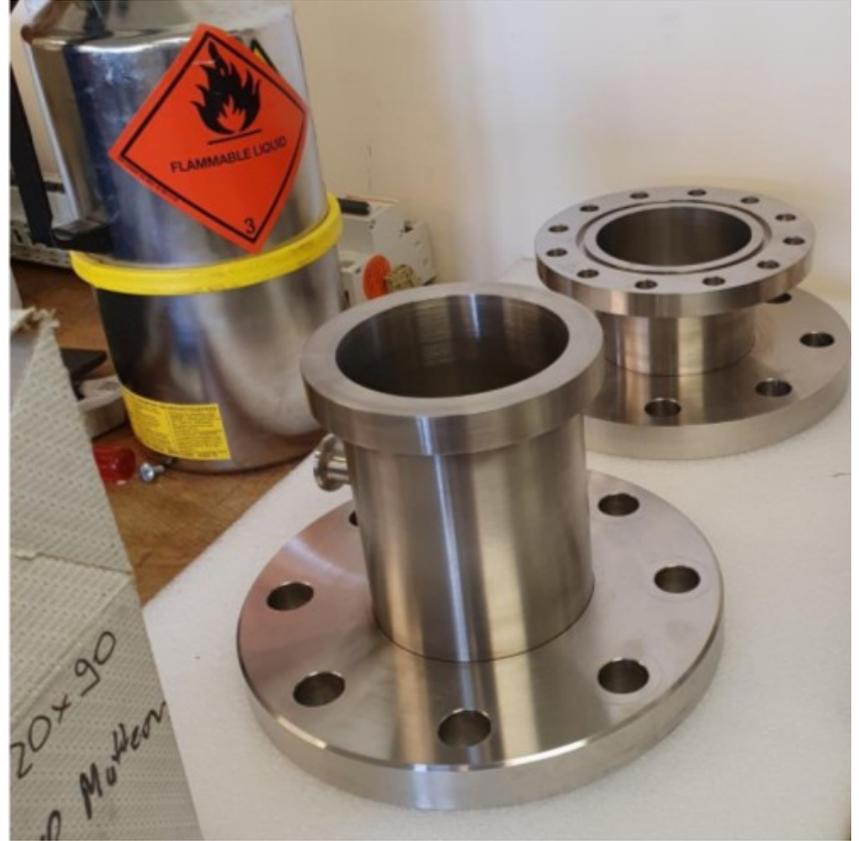
The IKAR electrodes



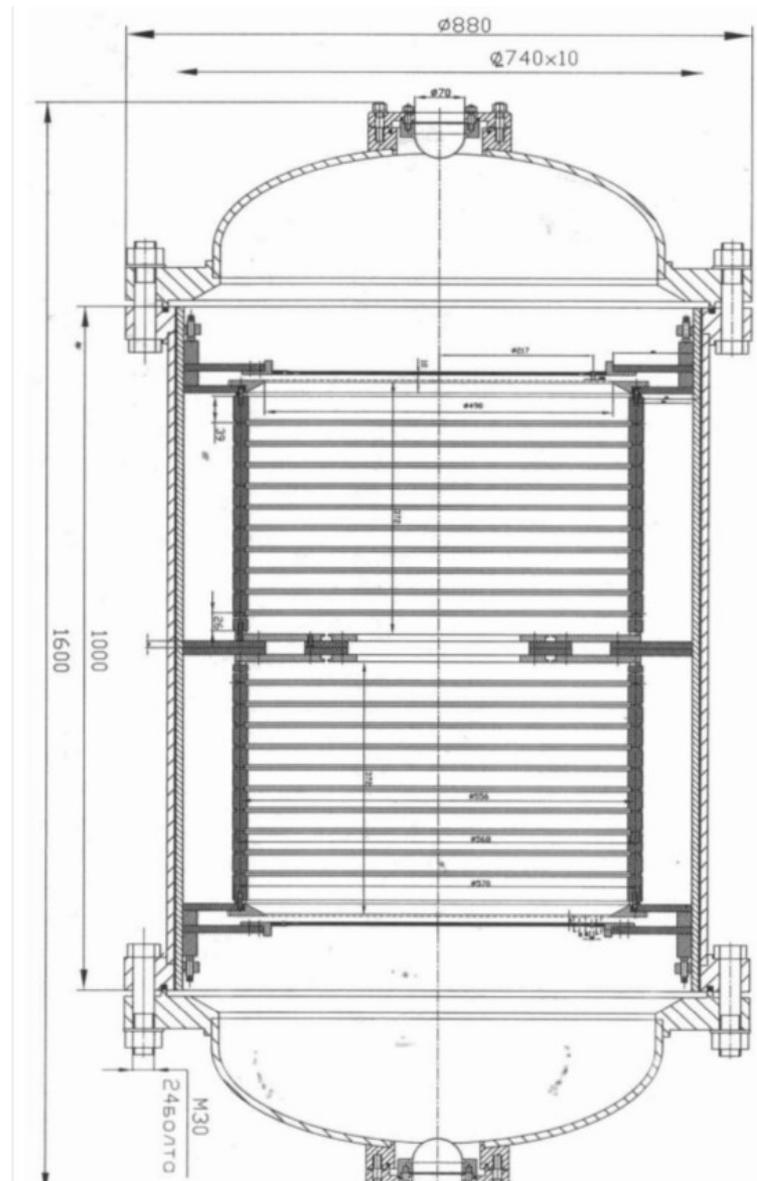
IKAR at CERN



Pressure valve with adapters



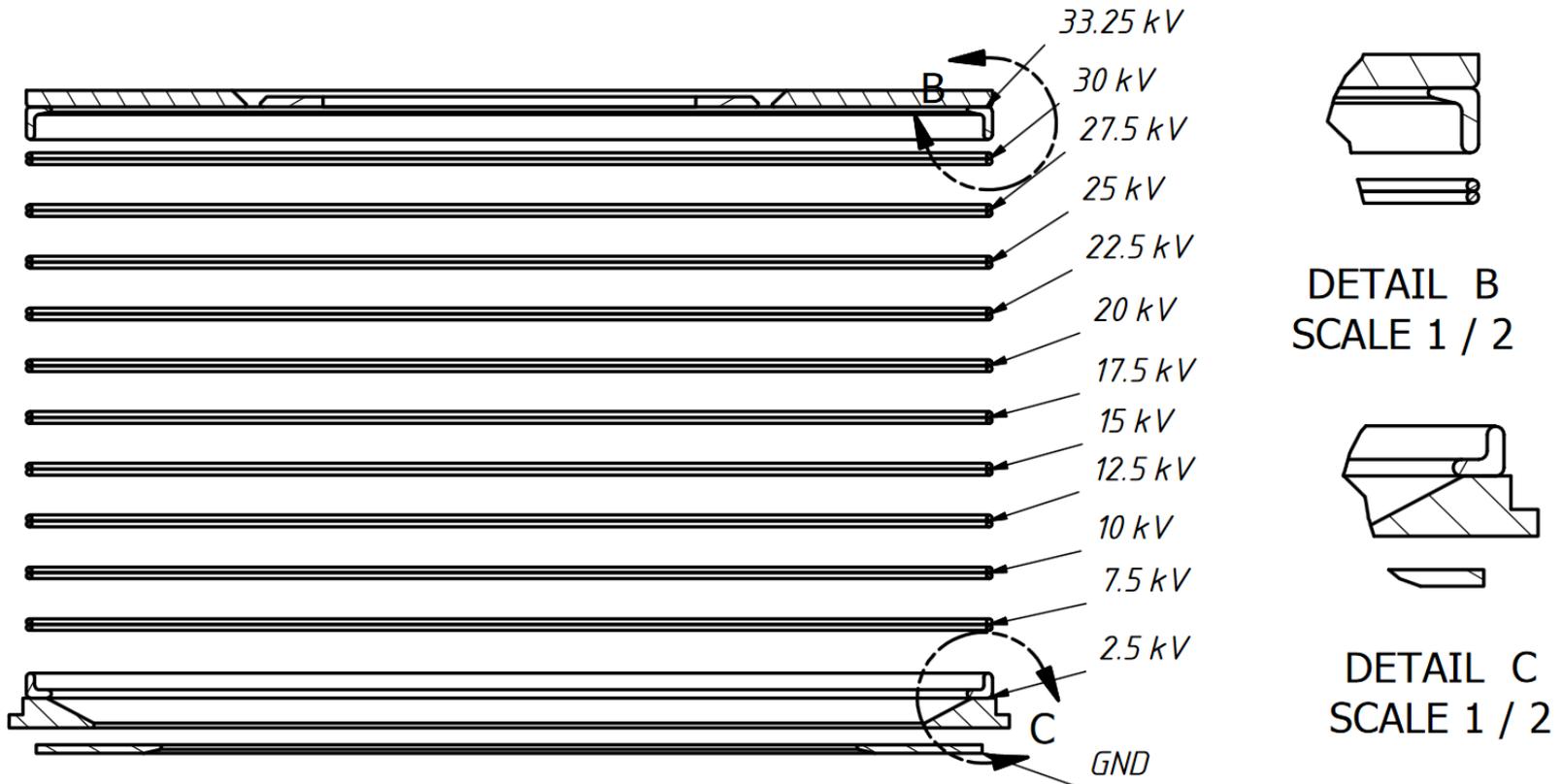
The IKAR inner structure



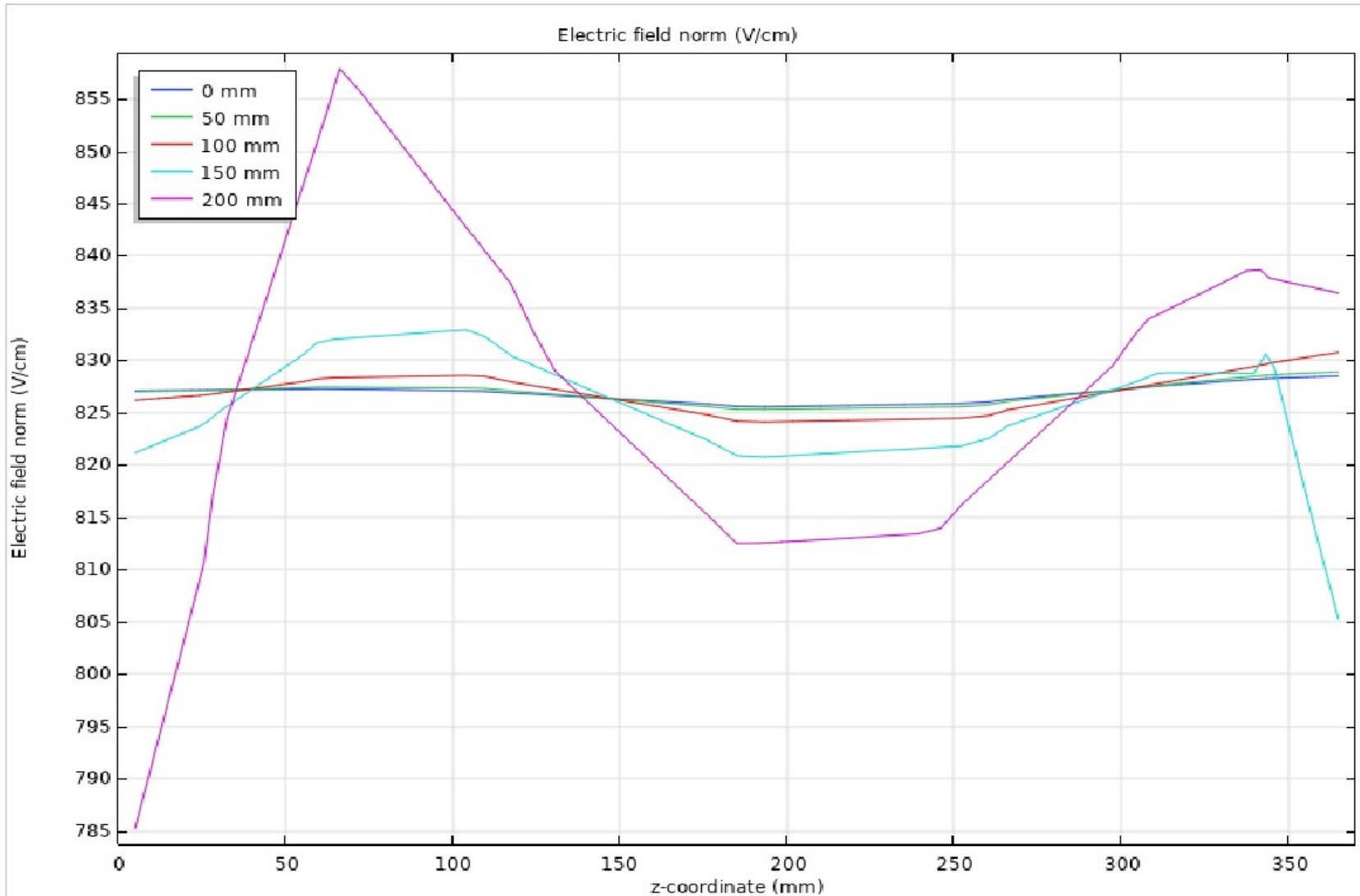
IKAR electric field

The IKAR will be operated with at -33.5 kV on the cathode and -2.5 kV on the grid. The field uniformity in the drift gap is improved by a set of 10 copper rings (field shaping rings). The field shaping rings (Cu wire, 7 mm) have outer diameter 570 mm, distance between the rings 31 mm and ones will be fixed on 6 bars (isolators PEEK). To obtain proper intermediate potentials, the rings will be connected to a voltage divider made of the ten HV resistors (2 GOhm), placed inside of IKAR.

The electric field shaping rings



IKAR electric field

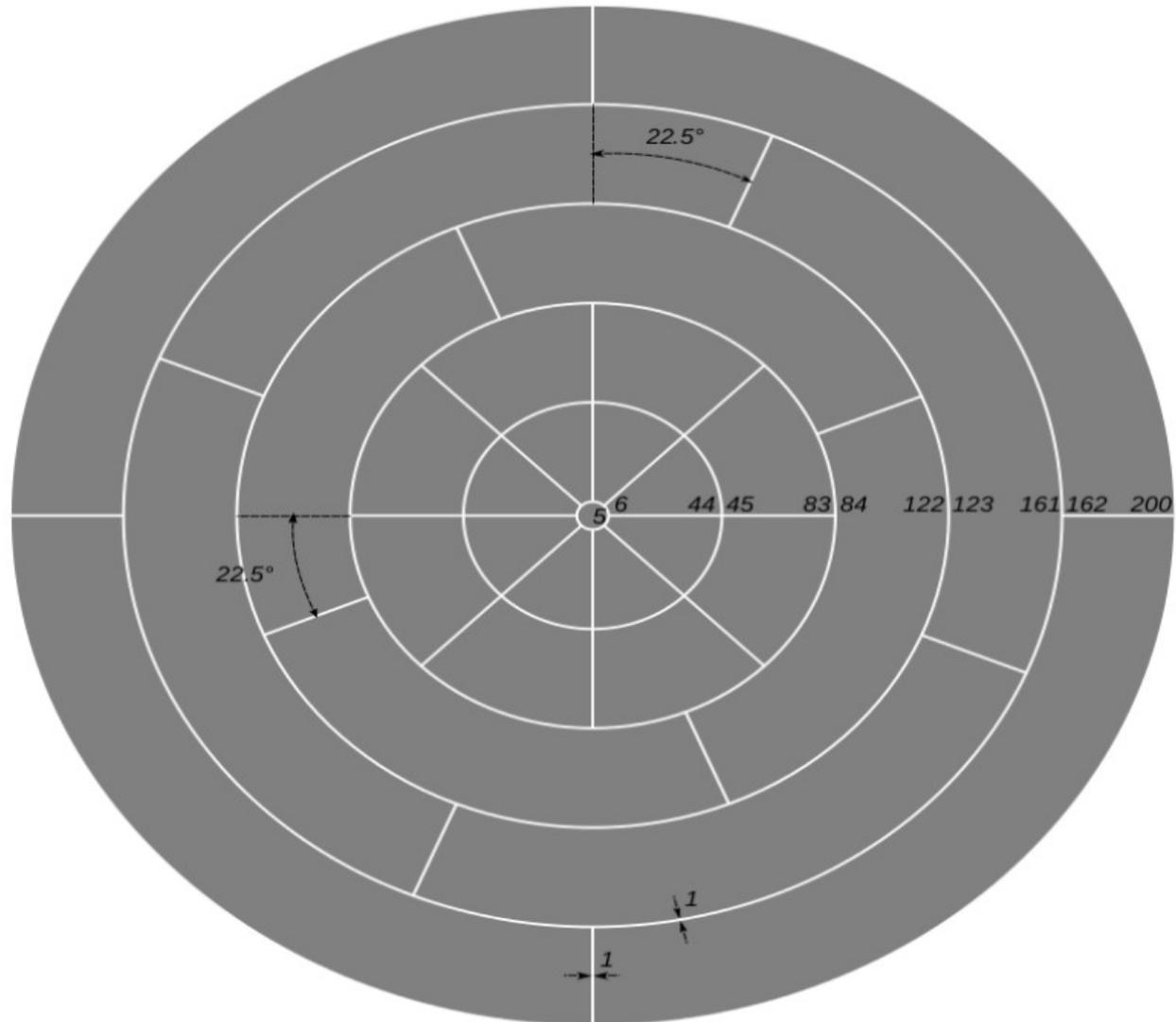




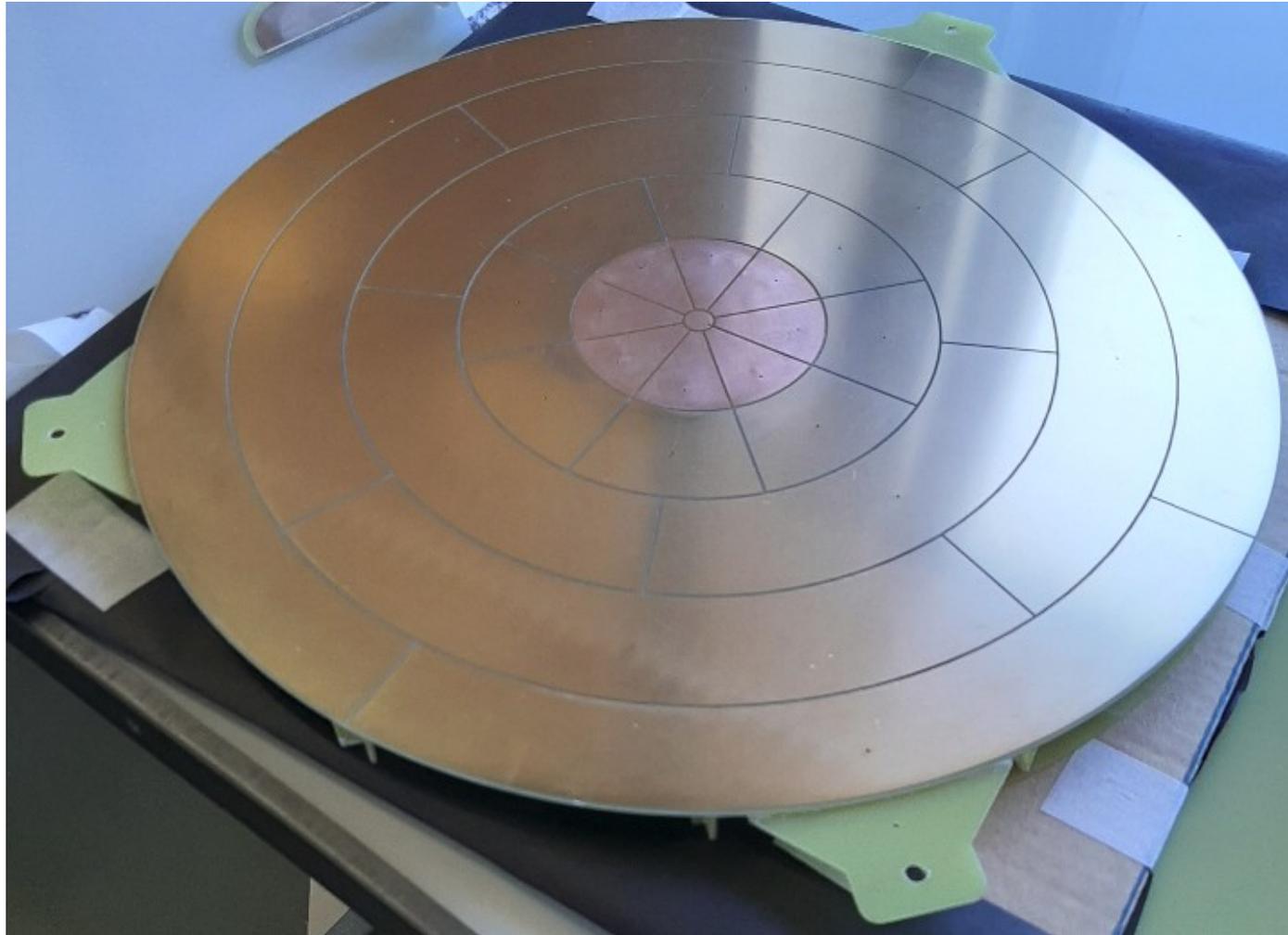
Anode plane for main TPC



Geometry of the IKARanode plane



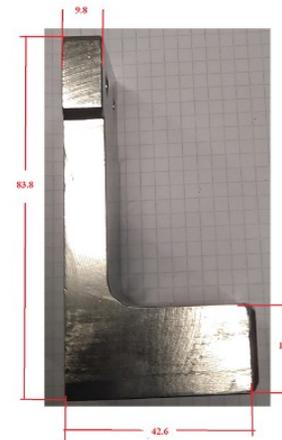
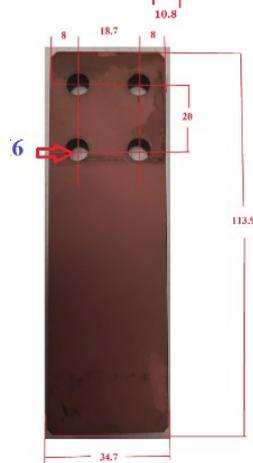
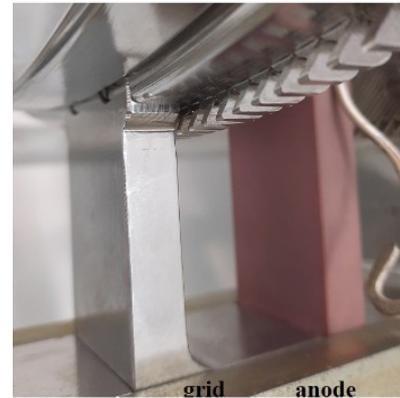
IKAR anode plane (29 pads)



IKAR anode cables



The ceramic supports for IKAR electrodes



Conclusion

1. The IKAR TPC has been equipped with new components; anode multi pin and HV cathode connectors, high pressure valve.
2. The all (20) IKAR flanges with the copper rings were changed on new ones with the viton o-rings.
3. TPC has been closed and the pressure (up to 12.5 bar) and vacuum leak tests have been performed.
4. The two new segmented anode planes (totally 60 pads) were constructed and were transported at CERN.
5. The system of the electric field shaping rings are under preparation.
6. The installation of the new inner IKAR structure are planning during 15 August- 15 September.
7. The final IKAR pressure test and the gas filling with helium and hydrogen are planning on the end of September.

Thank you for attention !